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Amendments to the Drawings:

The attached replacement sheets 1 and 2 include changes to Figs. 8 and 7 to change a misnumbered heat sink seed layer from "230" to --233--. Replacement sheet 1 includes Figs. 1 and 8 and replaces prior replacement sheet 1. Replacement sheet 2 includes Figs. 6 and 7 and replaces prior replacement sheet 4.

Attachment: Replacement Sheets 1 and 2

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REMARKS

In paragraph 1 of the Office Action it is indicated that the drawings received on July 24, 2006 are acceptable. Applicant appreciates the acceptance of these drawings. However, Applicant notes that amendments to Figs. 6 and 8 are submitted herewith, which amendments change a duplicate "230" to --233--. An amendment to the Specification regarding this number change is also submitted herewith. Applicant submits that no new matter is introduced by the correction to the drawings and Specification.

In paragraphs 2, 3 and 4 of the Office Action claim 3 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement, stating:

"Claim 3 recites the limitation "said heat sink is disposed at least in part directly upon said second magnetic pole." No embodiment disclosed in the specification meets this limitation. See, e.g., layers 94 and 110 in Fig. 5, which are located between heat sink 120 and second magnetic pole 84. See also Figs. 7-8, which show layers between a heat sink and a second magnetic pole."

Applicant respectfully traverses this ground of rejection and asserts that Fig. 8 depicts a magnetic head in which the heat sink is disposed upon the second magnetic pole. Referring to Fig. 8, it shows a second magnetic pole 190 having a heat sink structure fabricated thereon, wherein the heat sink structure includes a seed layer 233 having heat sink material 232 formed thereon (Applicant notes that prior Fig. 8 identifies the seed layer with the number "230" and that Applicant has amended Fig. 8 herein to change "230" to --233--). This heat sink structure is described in the Specification, page 14, lines 1-5 as:

"However where such problems are not significant, the insulation layers 94, 152 and/or 208 are not necessary, and Fig. 8 depicts a magnetic head 260 of the present invention that is similar to the device depicted in Fig. 7 in which the insulation layers 152 and 208 are not fabricated between the heat sinks and the magnetic poles."

Thereafter, the embodiment of Fig. 8 is described in the Specification, describing the fabrication of the seed layer 233 (changed herein from 230) and heat sink 220 upon the second magnetic pole 186. Applicant therefore respectfully submits that the limitations of claim 3 are supported by the Specification.

In paragraphs 2, 3 and 4 of the Office Action claim 3 is further rejected under 35 U.S.C. 112, first paragraph, stating:

“The specification does not enable a person of ordinary skill in the art to create a heat sink layer having a same thickness as the lead layer, in combination with the heat sink layer being directly upon the second magnetic pole, and further in combination with the heat sink layer being coplanar with the electrical lead.”

Applicant respectfully traverses this ground of rejection. Specifically, the embodiments depicted in Fig. 8 and described in the Specification is a device wherein the heat sink structure 220 is fabricated upon the second magnetic pole 186, and wherein the heat sinks structure 220 is fabricated within the same magnetic head layers and thus coplanar with the electrical lead 228. Applicant therefore respectfully submits that this ground of rejection has been satisfied.

In paragraphs 5 and 6 of the Office Action claims 1-2, 4-6, 11-12 and 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al (US Pat. No. 6731461 B2), stating:

“As recited in independent claims 1 and 21, Yamada et al show a magnetic head comprising: a write head portion (upper portion in Fig. 5) including a first magnetic pole (24, for example) and a second magnetic pole (20, for example); an induction coil 22 being disposed at least in part between said first and second magnetic poles; an electrical lead of said induction coil being (inherently) disposed in a layer of the magnetic head and having an electrical lead thickness; a heat sink 30.

As recited in claims 1 and 21, Yamada et al are silent regarding the heat sink being disposed within said layer and being coplanar within the magnetic head with said electrical lead of said coil; however, this position was within the level of ordinary skill in the art.

There is no invention in relocating known parts, when the functioning of the apparatus is not changed by the relocation. In re Japikse, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to arrive at the claimed relative locations of parts in the course of routine experimentation and optimization and as a matter of design choice. The rationale is as follows: one of ordinary skill in the art would have been motivated to achieve proximity between heat sink and coil so as to radiate heat efficiently (see col. 5, lines 14-39) and to save a forming step by forming the

heat sink layer in a same step as another layer is formed as taught by Yamada et al (see col. 5, lines 17-18; see also col. 8, lines 18-19).

As recited in claims 1 and 21, Yamada et al are silent regarding the claimed relative thickness of the heat sink layer and the electrical lead thickness.

There is no invention in changing the relative dimensions of a known apparatus, absent unexpected results due to the claimed relative dimensions. Gardner v. TEC systems, Inc., 220 USPO 777 (Fed. Cir. 1984)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to arrive at the claimed dimensions through the process of routine experimentation and optimization in the absence of criticality. The rationale is as follows: one of ordinary skill in the art would have been motivated to arrive at the claimed dimensions in order to achieve a desired heat conductivity, mass and cost of the head as is notoriously well known in the art.

As recited in independent claim 21, in addition to the above teachings, Yamada et al are silent regarding a hard disk drive comprising: at least one hard disk being adapted for rotary motion upon a disk drive; at least one slider device having a slider body portion being adapted to fly over said hard disk, and a magnetic head being formed on said slider body for writing data to said hard disk.

Official notice is taken of the fact that it was known in the art at the time the invention was made to use a magnetic head in a hard disk drive environment having the recited limitations.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the head of Yamada et al in the known hard disk drive environment. The rationale is as follows: one of ordinary skill in the art would have been motivated to dynamically record, store and reproduce data as is notoriously well known in the art.

Responsive hereto, Applicant respectfully traverses this ground of rejection and asserts that independent claims 1 and 21 recite subject matter that is not obvious from the teachings of Yamada '461.

In the rejection it is stated that:

1. Yamada '461 fails to teach a magnetic head in which a heat sink is fabricated to be coplanar with the electrical leads of the induction coil; and further,
2. that Yamada '461 fails to teach a magnetic head in which the heat sink and the electrical lead of the induction coil have the same thickness.

Therefore, these two features (location and dimension) of Applicant's heat sink structure are not taught by the prior art. Furthermore, while the prior art does show other heat sink locations, and other heat sink dimensions, the prior art provides no suggestion or motivation to

combine these two features as is taught in Applicant's invention and recited in independent claims 1 and 21.

Instead, the rejection relies on a first case citation, In Re Japikse for the proposition that "There is no invention in relocating known parts when the functioning of the apparatus is not changed by the relocation", and a second case, Gardner V. TEC Systems, Inc. for the proposition that there is no invention in changing the relative dimensions of a known apparatus, absent unexpected results due to the claimed relative dimension." Significantly, however, no citation is provided for the present situation in which both the location and dimensions of the present invention are not found in the prior art device, yet obviousness is found.

In Applicant's invention, as described in the Specification, both the location and the dimensions of the heat shield are significant in producing the advantages of the present invention; those advantages being among others a reduction in fabrication steps, wherein the heat sink is fabricated in the same fabrication steps for the creation of the electrical leads of the induction coil. This advantage is directly related to the location and dimensions of the heat shield, as recited in independent claims 1 and 21. The prior art fails to teach the combination of these limitations (location and dimensions), and the cited case law fails to address such a combination. Applicant therefore respectfully submits that independent claims 1 and 21 recite a combination of limitations that are not obvious from the teachings of the prior art.

As recited in claim 2, Yamada et al show that said heat sink is comprised of copper.

As recited in claim 2, Yamada et al are silent regarding whether said electrical lead is comprised of copper.

Official notice is taken of the fact that a copper electrical lead was known in the art at the time the invention was made.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the electrical lead out of copper as is notoriously well known in the art. The rationale is as follows: one of ordinary skill in the art would have been motivated to make the electrical lead out of copper in order to achieve high electrical and heat conductivity as is notoriously well known in the art.

Regarding dependent claim 2, Applicant submits that claim 2 is allowable in that it depends from an allowable base claim, independent claim 1.

As recited in claims 4 and 23, Yamada et al show an insulation layer (including the insulation between pole 20 and coil 22, for example) that is disposed in part above said second magnetic pole.

As recited in claims 4 and 23, Yamada et al are silent regarding the claimed locations of said electrical lead and said heat sink.

There is no invention in relocating known parts, when the functioning of the apparatus is not changed by the relocation. In re Japikse, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to arrive at the claimed relative locations of parts in the course of routine experimentation and optimization and as a matter of design choice. The rationale is as follows: one of ordinary skill in the art would have been motivated to achieve proximity between heat sink and coil so as to radiate heat efficiently (see col. 5, lines 14-39) and to save a forming step by forming the heat sink layer in a same step as another layer is formed as taught by Yamada et al (see col. 5, lines 17-18; see also col. 8, lines 18-19), and to save a forming step by forming the lead in a same step as the coil as is notoriously well known in the art.

With regard to dependent claims 4 and 23, Applicant submits that claims 4 and 23 are allowable in that they depend from an allowable base claim, independent claim 1.

As recited in claim 5, Yamada et al show that said heat sink 30 includes a first substantial portion (see right part of 30 in Fig. 5) that is disposed above said second magnetic pole 20, and another substantial portion (see left part of 30 in Fig. 5) that is disposed away from said second magnetic pole 20.

Regarding dependent claim 5 Applicant submits that claim 5 is allowable in that it depends from an allowable base claim, independent claim 1.

As recited in claim 6, Yamada et al are silent regarding whether said heat sink is disposed away from an air bearing surface of the magnetic head.

There is no invention in relocating known parts, when the functioning of the apparatus is not changed by the relocation. In re Japikse, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to arrive at the claimed relative locations of parts in the course of routine experimentation and optimization and as a matter of design choice. The rationale is as follows: one of ordinary skill in the art would have been motivated to avoid destroying magnetically recorded bits of information by heating the medium as is known in the art.

Regarding dependent claim 6, Applicant submits that claim 6 is allowable in that it depends from an allowable base claim, independent claim 1.

As recited in claim 11, Yamada et al are silent regarding whether said magnetic head is a longitudinal head.

Official notice is taken of the fact that longitudinal heads and perpendicular heads were known in the art at the time the invention was made.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the head of Yamada et al as a longitudinal head. The rationale is as follows: one of ordinary skill in the art would have been motivated to implement the head as a longitudinal head so as to enable recording on inexpensive magnetic media as is notoriously well known in the art.

Regarding dependent claim 11, Applicant submits that claim 11 is allowable in that it depends from an allowable base claim, independent claim 1.

As recited in claim 12, Yamada et al are silent regarding whether said magnetic head is a perpendicular magnetic head.

Official notice is taken of the fact that longitudinal heads and perpendicular heads were known in the art at the time the invention was made.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the head of Yamada et al as a perpendicular magnetic head. The rationale is as follows: one of ordinary skill in the art would have been motivated to implement the head as a perpendicular magnetic head so as to enable recording on high density magnetic media as is notoriously well known in the art.

As recited in claim 22, Yamada et al show that said heat sink 30 is disposed at least in part upon (but not directly upon) said second magnetic pole 20 (see Fig. 6)."

Regarding dependent claim 12, Applicant submits that claim 12 is allowable in that it depends from an allowable base claim, independent claim 1.

In paragraph 7 of the Office Action claims 7-10 and 24-27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Responsive hereto, Applicant appreciates the indication of allowable subject matter, and Applicant has amended claims 7 and 24 to be independent claims and thus allowable. It is noted that claims 7-10 and 24-27 were objected to and indicated to be allowable in the first office action, Applicant has therefore amended claims 7 and 24 by adding the limitation of original claims 1 and 21 respectively into them.

In paragraph 8 of the Office Action Applicant's arguments filed July 24, 2006, have been fully considered. Applicant appreciates the Examiner's consideration of Applicant's prior arguments.


Having responded to all of the paragraphs of the Office Action, and having amended the claims accordingly, Applicant respectfully submits that the Application is now in condition for allowance. Applicant therefore respectfully requests that a Notice of Allowance be forthcoming at the Examiner's earliest opportunity. Should the Examiner have any questions or comments with regard to this amendment, a telephonic conference at the number set forth below is respectfully requested.

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Respectfully submitted,


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